

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 4, 1994

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**FROM:** Ralph West, Systems Planning Corporation

**THROUGH:** Mike Merritt and Paul Gubanc

**SUBJECT:** Trip Report - Savannah River Site, F-Canyon Facility, January 26-28, 1994

- 1. Purpose.** System Planning Corporation (SPC) provides engineering technical support to the Defense Nuclear Facilities Safety Board under contract DNFSB-93-039. This memo describes and provides comments on training and qualification programs at the F-Canyon Facility. This trip was scheduled to observe Cold Chemical Runs (CCR) of the second plutonium process which is the final part of the ongoing WSRC Operational Readiness Review. Questions about the chemical content of solids in a low activity waste tank and a leaking evaporator condensate line prevented initiation of CCRs during the visit. As a result of this delay, visit time was used to tour the facility, review training status and interview operators and supervisors. The visit to F-Canyon was conducted January 26-28 by outside expert Ralph West. DNFSB staff member Paul Gubanc was visiting the site for other reasons during the same timeframe and spent some time on January 27 at F-Canyon participating in the review.
- 2. Summary.** Preparations for initiation of CCRs were reviewed. Adequate plans and personnel provisional qualification directives had been promulgated to provide sufficient guidance for operations. Guidance and training for Shift Technical Engineers was lacking to ensure these individuals understood their responsibilities and duties, especially with regard to compensating for identified weaknesses with the operator and supervisor training program. Interviews with STEs confirmed that these personnel do not fully understand the concept of their compensatory responsibilities.

Interviews with operating personnel showed that the level of knowledge of provisionally qualified CCR assigned personnel was significantly improved over that observed in previous visits. These people displayed a knowledge of the second plutonium process and its associated extraction chemistry, radiological concerns, and conduct of operations. Four qualification records were reviewed with two providing complete records of the training and provisional qualification status in an easily auditable format for the associated individuals. The other two records required attention to reach the same state as the other records reviewed.

Review of the training program revealed that no continuing training program has been established to meet the requirements of DOE Orders despite the fact that provisional

qualification is nearly completed for designated operators and supervisors. Shift orders contained repetitive information in a format that made it difficult to determine essential or new information.

3. **Background:** The F-Canyon facility processes nuclear fuel targets by solvent extraction to remove highly radioactive fission products and retrieve residual uranium and plutonium for future use. The uranium is converted to oxide form at the canyon's A-Line and the plutonium is transferred to the FB-Line for processing to a metallic form. F-Canyon has not operated since March 1992 when it was shut down to resolve an Unreviewed Safety Question regarding the structural integrity of the stack liner during a seismic event. The Canyon is currently making preparations to resume operations in the near future to process solutions in the facility and targets from the SRS L-Basin. WSRC is conducting an ORR prior to resumption of operations which will complete after observation of several CCR's. A recent memorandum signed by the Assistant Secretary of Environment, Safety and Health states that the forthcoming restart after an extended period of no operation is not a continuation of ongoing activity. Accordingly, the Assistant Secretary considers the National Environmental Policy Act (NEPA) to be applicable which, absent an emergency condition, requires an environmental impact statement prior to commencing processing. A review is in progress to determine if the situation warrants consulting with the Council on Environmental Quality regarding alternative arrangements for compliance with NEPA. The timing of the DOE ORR will be determined by the results of this review.

4. **Discussion/Observations:**

- a. WSRC Management indicated that a readiness for operations declaration cannot be made until correction of ORR findings and resolution of safety documentation questions. These items were expected to take at least a month to resolve after successful completion of initial CCRs.
- b. The CCRs are designed to checkout equipment, verify procedures, accomplish required qualification actions for operators and supervisors and validate operator adherence to conduct of operation requirements. CCRs will consist of initiation of aqueous and organic inputs to the A and B banks of the second plutonium process. Following the startup, a steady state will be maintained for a period of time to demonstrate normal operating performance, then a shutdown will be conducted. A second startup, steady state operation, and shutdown will be conducted with a simulated product feed being initiated during the cycle. This cycle of operations will be repeated many times to ensure that each operator and supervisor who is provisionally qualified for CCRs performs all steps in each position required by the qualification requirements.
- c. Currently three Shift Operations Managers, two First Line Supervisors, five Operators and seven Shift Technical Engineers have completed the second plutonium CCR provisional qualification. This number of qualified personnel provides the capability to operate two twelve hour shifts a day for about three

days. This in conjunction with small numbers of qualified personnel on the other steps of the process is considered sufficient for conducting operations one process at a time in batches, rather than operating the entire extraction process in a steady state.

- d. The qualification and training records of a Shift Operations Manager (SOM), a First Line Supervisor (FLS), an Operator and a Shift Technical Engineer (STE) were reviewed to determine their status relative to being ready to conduct CCRs. The record for the SOM had the required documentation to support designation as provisionally qualified for CCRs. Supporting documentation of courses, evaluations and examinations were present and organized to allow easy auditing. Only one required course on the Supervisor card for this individual was not documented. The record for the FLS did not contain the required documentation and was not organized. The record for the Operator was complete and well organized. The record for the STE did not contain a qualification standard with sign-off of requirements. A review of documented requirement completions in the record revealed many required for provisional qualification designation were not present. The record was not organized for easy auditing as required. A review of the final oral examination showed that no operational questions were asked about the interaction of the STE with the shift operators and supervisors.
- e. STEs will be stationed during canyon operations to provide an independent verification that the facility is being and can continue to be operated in accordance with the limits defined in the facility Authorization Basis. They are also stationed to compensate for qualification deficiencies of the operating staff in the following areas:
  - Overall system and integrated facility operations knowledge
  - Unit operations considered to be "non-discretionary"
  - Operator/supervisor familiarity with Authorization Basis documents, and knowledge of how Authorization Basis requirements are reflected in facility procedures; particularly in the knowledge and use of Safety Related System procedures.
- f. Three STEs were interviewed (two by myself and one by Paul Gubanc). These individuals were very knowledgeable about the extraction process and associated safety documentation. They expressed the opinion that they were to provide liaison between the operators and safety documentation. None of the STEs understood their role in compensating for operating staff qualification deficiencies. They had not received any training as to their compensatory duties and responsibilities. The operator I interviewed most extensively on this subject could not describe what actions to take for starting a process or relieving the shift other than a few cursory checks. The STEs expressed confidence in the ability and knowledge of the operators and supervisors so were not predisposed to be skeptical and inquisitive during operations.

- g. An operator who was provisionally qualified for the CCRs was interviewed concerning the second plutonium process operation, valve lineup procedures, chemical extraction theory, and safety requirements. He demonstrated a satisfactory level of knowledge in all area. A first line supervisor was interviewed concerning the second plutonium process operation, red oil problems, chemical extraction theory, and radiological concerns with operations. He showed some weaknesses with factors associated with a Tomsk-7 red oil type problem and organic solution concentration change effects. A crane operator was interviewed about CCR operations. He had difficulty in describing his duties during operation of the second plutonium process.
- h. Since many operators and supervisors are nearing completion of provisional qualification plans were reviewed concerning follow-on continuing training. A recent directive had promulgated guidance for an operating experience program. This program to cover operating incidents, operating procedure changes, new or special operating procedures, and other operating experience lessons learned does not include many aspects of continuing training set forth in DOE Order 5480.20, Personnel Selection. Qualification. Training. and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities, Chapter I, section 7.d.
- I. The January 26 shift orders for the canyon were reviewed. They were 12 pages in length and contained much general information which made it very difficult to determine changes and significant new or changed information. An example was that the problem with solids in a tank which was delaying CCRs was a one line entry stating that the tank "contains solids. Agitators are tagged and vessel is isolated. Followup on samples. " No specific guidance was provided for required sampling and operator understanding of what was being done varied significantly. Many entries were standard procedures such as "fill out all paper work" which should part of the long-term guidance as set forth in DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities, Chapter XV, section C.